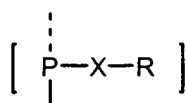


comprise an underlying working microelectrode on a substrate, wherein at least some of the microelectrodes are covered by a permeation layer comprising at least a first chemical group for attaching to the microarray biomolecules, the first group having the formula:



wherein,

P is a polymerizable moiety covalently attached to one or two moieties selected from the group consisting of: a monomeric unit of the permeation layer and another P-X-R group, as defined herein, wherein the other P-X-R group may be the same as or different from the first P-X-R group, further wherein the dashed line is a covalent bond to the second moiety if P is covalently attached to two moieties;

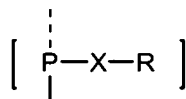
X is a covalent bond or a linking moiety; and

R is a functional moiety for attaching, either covalently or non-covalently, a derivatized biomolecule, or for attaching covalently another P-X-R group, as defined herein, wherein the other P-X-R group may be the same as or different from the first P-X-R group, and wherein R may, optionally, be attached to a biomolecule or another P-X-R group.

C1

14. (TWICE AMENDED) An electronically addressable microchip device comprising a plurality of electronically addressable microlocations, wherein the microlocations each comprise an underlying working microelectrode on a substrate, wherein at least some of the microelectrodes are covered by a permeation layer comprising first and second chemical groups having the formula

C2 sub D2



wherein,

the dashed line is a covalent bond to a second moiety if P is covalently attached to two moieties

P is a polymerizable moiety,

X is a linking moiety selected from the group consisting of a covalent bond, an alkyl group of 1-10 carbon atoms, an alkenyl group of 2-10 carbon atoms, alkyl esters, ketones, ethers amides, thioesters, amido groups, and carbonyls, and any combinations thereof; and

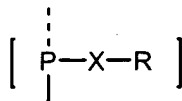
R is a functional moiety for attaching, either covalently or non-covalently, a derivatized biomolecule;

wherein the first and second P-X-R groups may be the same or different;

wherein the **P** moieties of the first P-X-R groups are covalently attached to the permeation layer matrix and to one **P** of the second P-X-R groups;

and wherein the **P** moieties of the second P-X-R groups are covalently attached to one or two other **P** moieties of other second P-X-R groups to form a polymer of the second P-X-R groups.

21. (TWICE AMENDED) An electronically addressable microchip device comprising a plurality of electronically addressable microlocations, wherein the microlocations each comprise an underlying working microelectrode on a substrate, wherein at least some of the microelectrodes are covered by a permeation layer comprising first P-X-R groups and second P-X-R groups having the formula:



wherein,

the dashed line is a covalent bond to a second moiety if P is covalently attached to two moieties;

P is a polymerizable moiety,

X is a linking moiety selected from the group consisting of a covalent bond, an alkyl group of 1-10 carbon atoms, an alkenyl group of 2-10 carbon atoms, alkyl esters, ketones, ethers amides, thioesters, amido groups, and carbonyls, and any combinations thereof; and

R is a functional moiety for attaching, either covalently or non-covalently, a derivatized biomolecule;

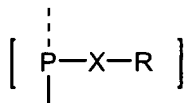
wherein the first and second P-X-R groups may be the same or different;

wherein the **P** moieties of the first P-X-R groups are covalently attached to the permeation layer matrix

wherein the **R** of the first P-X-R group is covalently attached to at least one **P** of the second P-X-R groups;

and wherein the **P** moieties of the second P-X-R groups are covalently attached to one or two other **P** moieties of other second P-X-R groups to form a polymer of the second P-X-R groups.

- 3
28. (TWICE AMENDED) An electronically addressable microchip device comprising a plurality of electronically addressable microlocations, wherein the microlocations each comprise an underlying working microelectrode on a substrate, wherein at least some of the microelectrodes are covered by a permeation layer comprising first P-X-R groups attached to one or two moieties selected from the group consisting of biomolecules and polymerized monomer units comprising second P-X-R groups, wherein the polymerized second P-X-R groups are further attached to biomolecules, wherein the attachment of the biomolecules to the first P-X-R groups or to the polymerized second P-X-R groups requires activation of at least one of the first and/or the second P-X-R groups under acidic and/or basic pH conditions, wherein the first and second P-X-R groups have the formula
- 24
- Sub D4



wherein,

the dashed line is a covalent bond to a second moiety if P is covalently attached to two moieties;

P is a polymerizable moiety, wherein;

X is a linking moiety selected from the group consisting of a covalent bond, an alkyl group of 1-10 carbon atoms, an alkenyl group of 2-10 carbon atoms, alkyl esters, ketones, ethers, amides, thioesters, amido groups, and carbonyls, and any combinations thereof; and

R is a functional moiety for attaching, either covalently or non-covalently, a derivatized biomolecule or for attaching covalently an other P-X-R group;

wherein **P** comprises a chemical element requiring activation for attaching to the permeation layer and/or to a **P** of another P-X-R group;

and wherein **R** comprises chemical elements requiring activation different from **P** of either the first or second P-X-R groups for attaching to biomolecules, or to **P** of another P-X-R groups.

REMARKS

Rejections under 35 U.S.C. § 112 for New Matter

The Examiner rejected claims 1-19, 21-26, 28-39, and 67-89 as indefinite under 35 U.S.C. § 112 as containing new matter. Applicants submit that the term at issue, “programmable microlocations,” is not new matter because on page 4, line 5 of the specification, the term “microarray” is defined as an array such as the addressable programmable electronic matrix (APEX) chip of U.S. Patent No. 5,632,957. The matrix of the ‘957 patent, which was